



## Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

# **TRANSACTIONS**

OF THE

THIRTIETH AND THIRTY-FIRST ANNUAL MEETINGS

OF THE

# **KANSAS ACADEMY OF SCIENCE.**

(1897-1898.)

---

EDITED BY THE LIBRARIAN.

---

VOLUME XVI.

---

PRINTED BY  
J. S. PARKS, STATE PRINTER,  
TOPEKA, KANSAS.  
JUNE 1899.

# **TRANSACTIONS**

OF THE

THIRTIETH AND THIRTY-FIRST ANNUAL MEETINGS

OF THE

# **KANSAS ACADEMY OF SCIENCE.**

(1897-1898.)

---

EDITED BY THE LIBRARIAN.

---

VOLUME XVI.

---

PRINTED BY  
J. S. PARKS, STATE PRINTER,  
TOPEKA, KANSAS.  
JUNE 1899.

## TABLE OF CONTENTS.

---

	PAGE.
<b>PROCEEDINGS.</b>	
THIRTIETH ANNUAL MEETING (1897) .....	1
THIRTY-FIRST ANNUAL MEETING (1898) .....	6
CONSTITUTION AND BY-LAWS .....	11
MEMBERSHIP JANUARY 1, 1899.....	13
<b>TRANSACTIONS.</b>	
I. PRESIDENTIAL ADDRESSES:	
Science in Education—S. W. Williston.....	16
The Kansas Academy of Science—D. E. Lantz.....	24
II. CHEMISTRY AND PHYSICS:	
Relativity in Science—E. B. Knerr.....	34
Chemical Composition of Cement Plaster—E. H. S. Bailey.....	38
Occurrence of Nitrates in Well-waters—E. H. S. Bailey.....	40
Mineral Springs and Wells of Kansas—E. H. S. Bailey.....	42
Silico-barite Nodules near Salina, Kan.—E. B. Knerr.....	43
Concretions—E. B. Knerr .....	44
Variations in the Nitrogen-Content of Maize, and Possibilities for Improvement of It—J. T. Willard .....	46
Water Purification—Wm. Tweeddale.....	48
III. GEOLOGY AND PALEONTOLOGY:	
Physiography of Southeastern Kansas—Geo. I. Adams.....	53
<i>Fusulina cylindrica</i> Shell Structure—Alva J. Smith .....	64
New Developments in the Mentor Beds—A. W. Jones.....	65
Fossil Turtle Cast from the Dakota Epoch—C. S. Parmenter .....	67
Deep Well at Madison, Kan.—F. W. Bushong.....	67
Correlation of the Coal Measures of Kansas and Nebraska—J. W. Beede .....	70
IV. PHYTOLOGY AND THERAPEUTICS:	
Therapeutical Notes and Descriptions of Medicinal Plants of Kansas —L. E. Sayre .....	85
Root Tubercles and their Production by Inoculation—D. H. Otis...	88
Bibliography of Literature Relating to the Effects of Wind on Plants —J. B. S. Norton .....	103
Floral Horologe for Kansas—B. B. Smyth .....	106
List of Plants in my Florida Herbarium—A. S. Hitchcock .....	108
Additions to the Flora of Kansas—B. B. Smyth .....	158
The Kansas Uredineæ—Elam Bartholomew .....	168

## V. ZOOLOGY, ETC.:

Collecting Notes on Kansas Coleoptera—W. Knaus.....	197
The Elm Twig-girdler ( <i>Oncideres cingulatus</i> Say)—Percy J. Parrott, .....	200
List of Kansas Hymenoptera—J. C. Bridwell.....	203
List of Certain Hymenopterous Families Collected in New Mexico —	
T. D. A. Cockerell.....	212
Notes on Birds of Southern Kansas—J. R. Mead.....	216
List of Birds Collected by Col. N. S. Goss in Mexico and Central	
America—D. E. Lantz.....	218
A Review of Kansas Ornithology—D. E. Lantz.....	224
I. Bibliography of Kansas Birds.....	224
II. Historical List of Kansas Birds.....	244
<i>Antrostomus Carolinensis</i> —R. Matthews.....	277
Are Quails Native to Kansas—J. R. Mead .....	277
<i>Felis Concolor</i> —J. R. Mead .....	278
Natural-history Notes of 1859—J. R. Mead.....	280
Additional Notes on the Timbered Mounds of the Kaw Reservation—	
C. N. Gould.....	282
Natural-history Possibilities of Belvidere and Vicinity—C. N. Gould, .....	283
Fossil Insects in the Comanche Cretaceous—C. N. Gould.....	284

## APPENDIX:

Accessions to the Library—B. B. Smyth, Librarian .....	285
--	-----

## LIST OF ILLUSTRATIONS.

PLATE I. Water Purification Plan—Tweeddale.....	48
PLATE II. Physiographic Areas of Kansas—Adams.....	54
PLATE III. Physiography of Southeastern Kansas—Adams.....	58
PLATE IV. Fossil Turtle Cast from the Dakota Epoch—Parmenter (facing)	66
PLATE V. Deep Well at Madison—Bushong.....	68
PLATES VI, VII, VIII. Soy-beans and Tubercles—Otis.....	93-95
PLATE IX. Floral Clock for Kansas—Smyth.....	106

## MEMBERSHIP JANUARY 1, 1899.

## OFFICERS.

Elected December 30, 1898.

President.....	E. B. Knerr.....	Atchison.
Vice-Presidents.....	{ A. S. Hitchcock..... J. R. Mead.....	Manhattan. Wichita.
Secretary.....	D. E. Lantz.....	Chapman.
Treasurer.....	J. W. Beede .....	Topeka.
Librarian.....	B. B. Smyth .....	Topeka.
Curators.....	{ A. H. Thompson ....., B. B. Smyth ....., Geo. Wagner ....., W. A. Harshbarger.....	Topeka. Topeka. Lawrence. Topeka.

## HONORARY MEMBERS.

Theo. S. Case, Ph. D.....	Kansas City, Mo.
Rev. John D. Parker, Post Chaplain.....	Los Angeles, Cal.
Capt. Arnold B. Johnson, Lighthouse Board.....	Washington, D. C.
W. A. Kellerman, Ph. D., Ohio University .....	Columbus, Ohio.
Edw. L. Nichols, Ph. D., Cornell University.....	Ithaca, N. Y.
W. S. Franklin, Ph. D., Lehigh University.....	South Bethlehem, Pa.

## ASSOCIATE MEMBERS.

Mrs. Mary E. Mudge .....	Manhattan.
Mrs. Mary Savage .....	Lawrence.

## LIFE MEMBERS.

Francis H. Snow, LL.D., Kansas University.....	Lawrence.
A. H. Thompson, D. D. S.....	Topeka.
Joseph T. Lovewell, Ph. D., Washburn College.....	Topeka.
J. R. Mead.....	Wichita.
Edwin A. Popenoe, M. A.....	Berryton.
Peter McVicar, D. D., Washburn College.....	Topeka.
S. W. Williston, Ph. D., Kansas University.....	Lawrence.

## ACTIVE MEMBERS.

Geo. I. Adams, Ph. D., Kansas University.....	Lawrence.
Orr Adams.....	Topeka.
T. M. Aderhold, B. S., Northwestern University.....	Chicago, Ill.
E. H. S. Bailey, Ph. D., Kansas University .....	Lawrence.
S. A. Baldwin.....	Wabaunsee.
Elam Bartholomew, M. S.....	Rockport.
Edward Bartow, Ph. D., Kansas University.....	Lawrence.
Wm. C. Bauer, Baker University.....	Baldwin.
C. E. Becker.....	Ottawa.
J. W. Beede, A. M., Kansas University .....	Lawrence.
Lucien I. Blake, Ph. D., Kansas University .....	Lawrence.
S. R. Boyce, Ph. G.....	_____.
C. M. Breese, M. S.....	_____.
Arthur Bridwell, Baker University .....	Baldwin.
J. C. Bridwell, Baker University .....	Baldwin.
L. P. Brous.....	Kansas City, Kan.
W. Barnum Brown.....	Carbondale.

Edw. Bumgardner, M. D.....	Lawrence.
F. W. Bushong, B. S., College of Emporia.....	Emporia.
H. P. Cady, B. A., Cornell University.....	Ithaca, N. Y.
Chas. S. Caldwell.....	San Jose, Costa Rica.
Mrs. Helen Campbell, Agricultural College.....	Manhattan.
M. A. Carleton, M. S., Agricultural Department.....	Washington, D. C.
E. C. Case, Ph. D., Chicago University.....	Chicago, Ill.
T. D. A. Cockerell, Ph. D., Agricultural College.....	Mesilla Park, N. M.
H. M. Cottrell, Agricultural College.....	Manhattan.
F. W. Cragin, M. S., Colorado College.....	Colorado Springs, Colo.
W. R. Crane, A. B., Kansas University.....	Lawrence.
Lottie E. Crary.....	Council Grove.
Chas. H. Curtis.....	McPherson.
F. B. Dains, B. S., Chicago University.....	Chicago, Ill.
R. B. Dunlevy, B. S., Southwest Kansas College.....	Winfield.
A. St. C. Dunstan, C. E., Kansas University .....	Lawrence.
L. L. Dyche, M. S., Kansas University .....	Lawrence.
Frank Ellsworth.....	Effingham.
Arnold Emch, Ph. D., Agricultural College.....	Manhattan.
D. E. Esterly, M. D.....	Topeka.
B. F. Eyer, high school .....	Topeka.
E. C. Franklin, Ph. D., Kansas University.....	Lawrence.
F. E. Forbes .....	Topeka.
C. N. Gould, Southwest Kansas College .....	Winfield.
I. D. Graham, B. A.....	Manhattan.
G. P. Grimsley, Ph. D., Washburn College.....	Topeka.
E. S. Harnly, B. S., McPherson College.....	McPherson.
W. A. Harshbarger, B. S., Washburn College .....	Topeka.
Erasmus Haworth, Ph. D., Kansas University .....	Lawrence.
E. H. Heacock, B. S., high school.....	Topeka.
H. V. Hinckley, C. E.....	Topeka.
A. S. Hitchcock, M. S., Agricultural College .....	Manhattan.
C. B. Hoffman.....	Enterprise.
Earl M. Hoisington.....	Great Bend.
Ross Hopkins.....	Lawrence.
J. D. Hooper .....	Manhattan.
S. J. Hunter, A. M., Kansas University .....	Lawrence.
Theo. M. Iden, Normal School .....	Emporia.
O. M. Irelan.....	Hurdland, Mo.
T. B. Jennings, United States Weather Bureau .....	Topeka.
A. W. Jones, B. S., Wesleyan University .....	Salina.
Hugo Kahl, Kansas University .....	Lawrence.
V. L. Kellogg, M. S., Leland Stanford, jr., University .....	Palo Alto, Cal.
W. H. Keller .....	Madison.
D. S. Kelly, A. M.....	Jeffersonville, Ind.
Mrs. Bertha S. Kimball Dickens, M. S.....	Ellinwood.
Warren Knlaus, M. S.....	McPherson.
E. B. Knerr, Sc. D., Midland College.....	Atchison.
C. A. Kraus.....	Lawrence.
D. E. Lantz, M. S., Dickinson county high school .....	Chapman.
V. L. Layton .....	Lawrence.
W. N. Logan, B. S.....	Beloit.
C. L. Marlatt, M. S., Agricultural Department .....	Washington, D. C.

F. A. Marlatt, M. S.	
F. O. Marvin, C. E., Kansas University	Lawrence.
R. Matthews, D. D. S.	Wichita.
C. F. Menninger, M. D.	Topeka.
Mrs. A. H. Merrill	Topeka.
Benj. L. Miller, B. A., Penn College	Oskaloosa, Iowa.
Ephraim Miller, Ph. D., Kansas University	Lawrence.
E. C. Murphy, C. E., Kansas University	Lawrence.
H. L. Nelson, Washburn College	Topeka.
H. B. Newson, Ph. D., Kansas University	Lawrence.
A. M. Nissen, A. M., public school	Wetmore.
Matthew Noll, Ph. G.	Atchison.
J. B. S. Norton, B. S., Missouri Botanical Garden	St. Louis, Mo.
D. H. Otis, M. S., Agricultural College	Manhattan.
Walter K. Palmer, M. E., Kansas University	Lawrence.
E. N. Parker	Potwin.
C. S. Parmenter, A. M., Baker University	Baldwin.
Percy J. Parrott, A. B., Agricultural College	Manhattan.
C. W. Pratt	Howard.
J. M. Price, jr., B. S.	Atchison.
C. S. Prosser, M. S., Union College	Schenectady, N. Y.
E. G. Pultzer, Baker University	Baldwin.
Minnie Reed, M. S., high school	San Diego, Cal.
E. S. Riggs, A. M., Harvard University	Cambridge, Mass.
W. R. Ringle, Kansas University	Lawrence.
W. G. Riste, B. S., high school	Colby.
F. H. Rose, Southwest Kansas College	Winfield.
L. E. Sayre, Ph. M., Kansas University	Lawrence.
J. E. Shacklett	Fall River.
S. Z. Sharp, A. M., Plattsburg College	Plattsburg, Mo.
E. T. Shelly, M. D.	Atchison.
Alva J. Smith	Emporia.
B. B. Smyth, Academy of Science	Topeka.
J. W. Stailey	Lawrence.
Chas. H. Sternberg	Lawrence.
W. C. Stevens, M. S., Kansas University	Lawrence.
Alban Stuart, B. A., Kansas University	Lawrence.
W. T. Swingle, M. S., Agricultural Department	Washington, D. C.
F. J. Titt	Topeka.
E. E. Tyler, M. S., Polytechnic Institute	Lincoln, Neb.
Wm. Tweeddale, C. E.	Topeka.
D. M. Valentine, LL. D.	Topeka.
Geo. Wagner, Ph. C., Kansas University	Lawrence.
J. D. Walters, M. S., Agricultural College	Manhattan.
M. L. Ward, D. D., Ottawa University	Ottawa.
Lora L. Waters, M. S.	Manhattan.
Geo. F. Weida, Pn. D., Agricultural College	Manhattan.
H. C. Welty	Topeka.
J. T. Willard, M. S., Agricultural College	Manhattan.
J. W. Wilson, B. S., high school	Effingham.
L. C. Wooster, Normal School	Emporia.
J. A. Yates, Ph. D., Ottawa University	Ottawa.
J. E. Youngberg, Ph. G.	Ottawa.